Archaeological Projects 1980-1983: Department of Anthropology, Silpakorn University, Bangkok

by Pornchai Suchitta

Since late 1979, some staffmembers from the Department of Anthropology, Silpakorn University, Bangkok, Thailand, have been actively engaged in four major archaeological projects. These projects may be summarized as follows.

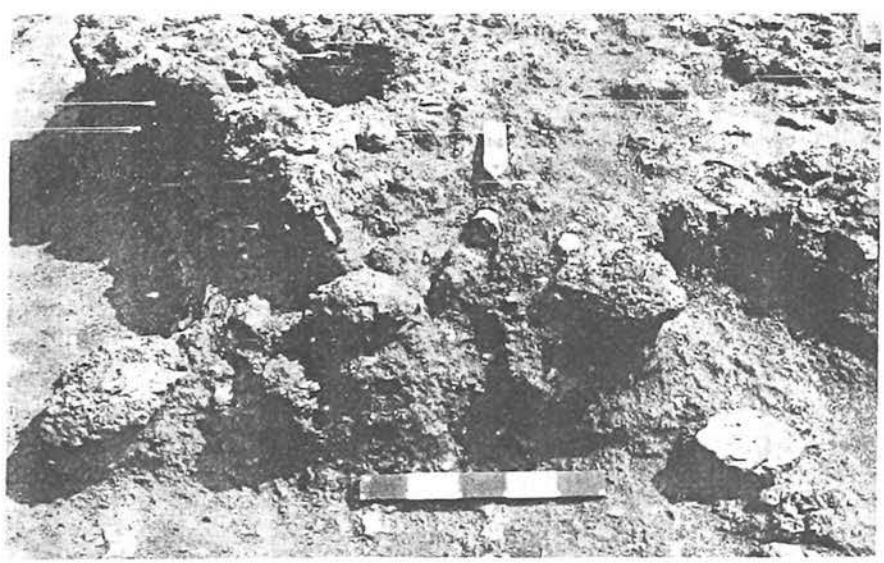
Project i

The first project, "The History and Development of Iron Smelting Technology in Thailand," was conducted as a Ph.D. dissertation submitted to Brown University last November 1982 by Pornchai Suchitta.

A survey was made in locating and identifying the remains of ancient iron smelting operations and the technology involved at various ancient settlements located in the central and lower northeast regions of Thailand. More than fifty sites were identified. Major attention was focused at Lopburi province, central region, where an archaeological excavation was carried out at an ancient iron smelting village dated to ca. 6th century A.D. based on C-14 analyses. An approach called ethnotechnology by the researcher covering ethnohistory, ethnoarchaeology, ethnography and documentary research was used to discern the obscure iron smelting practice in Thailand through time.

This research revealed that since the prehistoric time in Thailand iron use was known and we assumed that the knowledge of iron making was also known. A concrete evidence of iron smelting in Thailand came from the site of Ban Di Lung, Lopburi province. A survey at this village revealed that the ancient smelters built their furnaces on mounds or slightly raised ground which eventually became higher as a result of frequent iron smelting operations. The hypothesized shaft type of furnace, a superstructure as seen from the archaeological data, was built of clay supported by wooden frames while it was in its constructional stage. Tuyeres made of clay tempered with pebbles from laterite rocks were inserted into the

Remains of 6th century A.D. iron smelting furnace at Ban Di Lung, Lopburi Province, showing tuyere fragments with large chunks of slag on the outer edge of the feature (scale = 50 cm.).



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Remains of tuyere fragments showing slag wetted ends, vitrified and reduced areas along the sample; also shown are slag samples from the excavation at Ban Di Lung, Lopburi province (scale = 30 cm).

furnace. Bellows, most probably made of bamboo as seen today, were used to induce the air into the furnace via the tuyeres. Evidence of the use of preheating the air via the tuyeres at such an early date suggests the possibility of an indigenous practice of this technology.

The iron ore used for smelting at Ban Di Lung was mainly hematite, probably procured from the area of Khao Thab Kwai Mountain about 40 km. away from the site. Charcoal with a low fixed carbon content was used as fuel in smelting iron ore. The slag was tapped off the furnace as evidenced by the physical appearance and the location of the slag found. The temperature reached in the furnace was probably above 1200°C with the aid of preheating the air as evidenced from tuyere fragments indicating vitrified and reduced areas. There is no clear evidence of flux use in iron smelting at Ban Di Lung. Unfortunately, no iron bloom was found from the excavations.

The research also covers an historical survey on the role of iron and its technology as practised in Thailand from the historical period up to the present. Also, an ethnohistorical enquiry was conducted at Bho Luang village in Chiangmai province where resided the Lawa people. The Lawa used to smelt iron for their own benefit. Utilizing the basic smelting operation, they produced relatively good iron bloom with 0.28% of carbon content.

This research was kindly supported by the Ford Foundation and the Wenner-Gren Foundation for Anthropological Research. A copy of this dissertation will be available in 1984 through the University Microfilms International.

Project II

The second project, "The Survey and Study of Archaeological Sites in the Lower Mun-Chi, Lower Northeast Thailand," was carried out at the beginning of 1981 by Srisakara Vallibhotama (team leader), Put Veeraprasert, Pornchai Suchitta, and W.J. van Liere who joined part of the survey. The report of the survey was prepared and submitted in 1981 to the Netherlands Engineering Consultants (NEDECO) as a feasibility study for the Mekong Project, Bangkok.

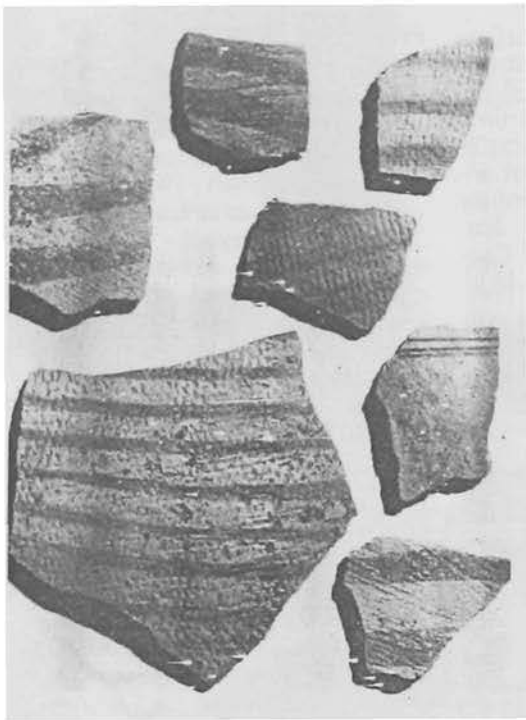
The main purpose of this project was to locate and identify archaeological sites located along the tributaries of the Mun and Chi Rivers or Mun-Chi basin which covers area in the provinces of Mahasarakham, Burirum, Srisaket, Surin, Roi-et, Yasothon and Ubon Ratchatani. During the survey, surface collection of ancient artifacts especially potsherds was carried out at all of the identified sites.

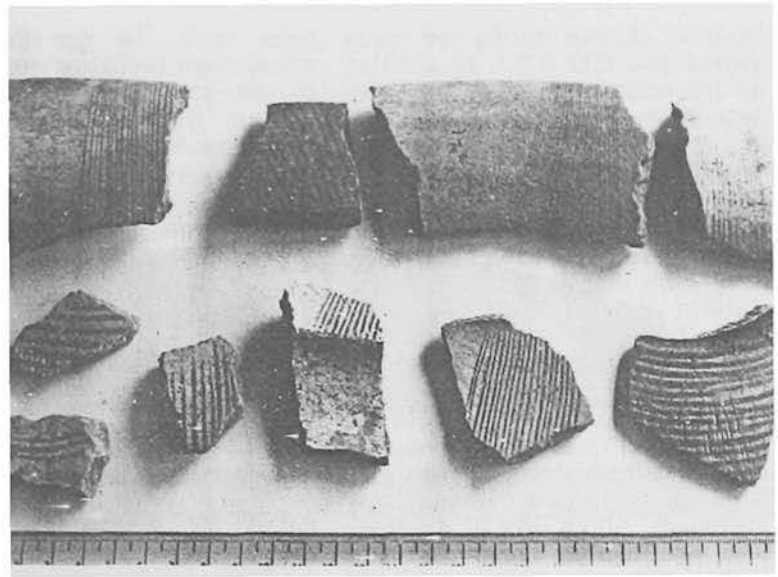
The survey team was able to identify 199 archaeological sites (prehistoric and historic) in the surveyed area. About 35% of the total historic sites revealed that these sites are surrounded by ancient moats ranging from single to triple in construction and some by earth walls.

Examples of prehistoric findings include polished stone adzes and axes, and various types and kinds of earthenware pottery found in the area of Kaset Wisai district, Roi-et province. Another site which is located at Non Yang, along one of the tributaries of the Mun River, Chumphonburi district, Surin province, was identified. Charcoal sample was obtained from the exposed stratigraphy (excavated) of this site in association with painted potsherds in stripes dated from C-14 analysis to be 3000 ±250 B.P. This unique painted earthenware in stripes (dark red or brown) on the body with painted lines on the inner flared rim is widely distributed in the Mun-Chi basin. So far it has not been reported to exist in the upper northeast region or the Sakon Nakon basin. In addition to this unique painted pottery, pots with painted lines on the flared rim containing human bones were also found at many sites, for example, at Ban Ya Wuk, Surin province. The excavation at Ban Ya Wuk is expected to be continued this summer 1983.

Other significant findings include evidence of the spread of Khmer culture into the Mun-Chi basin as seen from art objects and temples. These are found in the area of Tha Tum district, Surin province, passing Tung Kula Ronghai to Ku Phra Ko Na at Suwanaphum district, Roi-et province. From there, it spreads up to Lam Nam to Roi-et and Mahasarakham provinces.

Moreover, traces of ancient salt





Left: Examples of earthenware potsherds painted in stripes found throughout the Mun-Chi basin, e.g. at Ban Non Sung, Rasisisalai district, Srisaket province. Right: Examples of fine painted parallel lines on earthenware potsherds found at various sites in the Mun-Chi basin, e.g. at Ban Tha Klang, Kamalasai district, Kalasin province.

making at various historic sites starting from Kaset Wisai to Suwannaphum districts, Roi-et province, were revealed. A good example comes from the area along the Lam Nam Sieo where many high mound settlements are located which show that salt-making was possible till recently. Various types of potsherds such as the glazed Khmer stoneware of Lopburi period were found at these ancient settlements.

Metal smelting/working is also evidenced from the presence of slag in great quantity. The survey reveals more than 40 ancient metal presumably to be iron smelting/working sites located within the ancient settlements distributed in the seven provinces surveyed. Examples include Ban Ya Wuk, Surin province; Ban Tha Nain, Suwannaphum district, Roi-et province; Ban Khok Muang, Satuk district, Buriram province; Ban Don Klua, Rasisalai district, Srisaket province; Ban Bung Kae, Mahachanachai district, Yasothon province; Ban Si Suk, Nuang Noi district, Ubon Ratchatani province; and Ban Khe Lhek, Phayak-khaphumphisai district, Mahasarakham province.

Slag samples from these sites were chemically analyzed. The test revealed that the average iron (Fe) composition by weight in the samples is above 35%. This is expected in ancient iron smelting operations where a high percentage of iron is left in the slag. The findings of these metal operations, presumably iron, at many ancient settlements suggest that metal work and use were important activities which might have contributed to and enhanced the trade network among those who smelt iron and those who do not.

Project III

The third project is another archaeological study and survey of the Nam Songkhram Basin, upper northeast Thailand. The team is composed of Srisakara Vallibhotama (teamleader), Put Veeraprasert, and two more staffmembers who joined part of the survey, i.e., Pornchai Suchitta and W.J. van Liere. The report was submitted in March 1982 to the Netherlands Engineering Consultants (NEDECO) as a feasibility study for the Mekong Project, Bangkok.

The area under investigation covers the Nam Songkhram River and its tributaries such as the Huai Pla Hang, the Huai Nam Yam, the Mong, the Nam Kam and the Huai Luang. Special attention was focused on the riverine areas which are located in the provinces of Sakon Nakon and Udon Thani.

The main purpose of this project, which is similar to the Lower Mun-Chi Basin Project, is to identify and locate archaeological sites in the Nam Songkhram basin in order to discern their cultural significance prior to their further annual destruction due to the inundation in the area in addition to the diggings by the villagers as pot hunters. The annual flooding in the basin comes from the high water level in the Mekong River which has Nam Songkhram as one of its tributaries.

It is apparent from the survey that this region, as it is geographically separated from the Korat Basin of the Mun-Chi drainage system by the interruption of the Phu Phan Range, is no doubt another cultural area within the northeast region of Thailand. What makes it distinct from the Korat counterpart

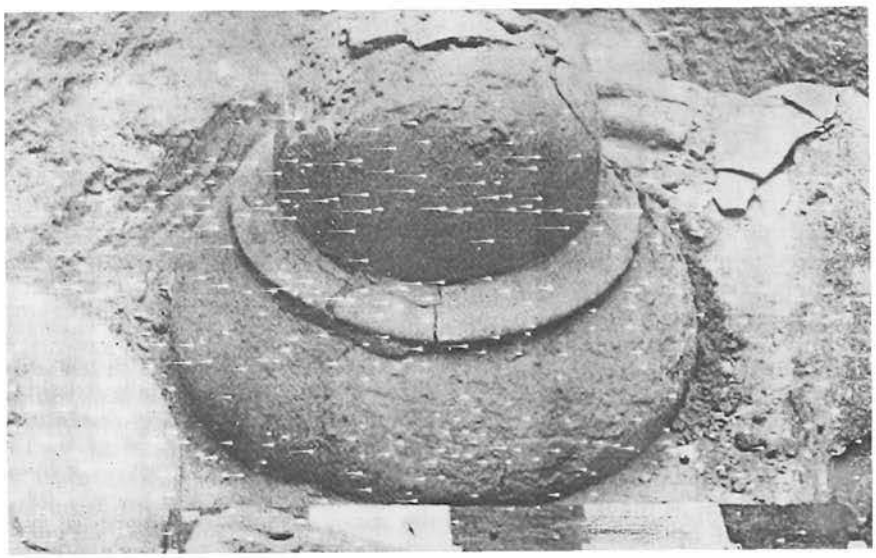
become obvious during the metal period (ca. 500 B.C.). In addition to the ceramic tradition, the Songkran Basin people practised primary burial, e.g. Ban Chiang, for the dead from the beginning until the late protohistoric time. This is in contrast with the Korat Basin tradition, particularly that of the lower Mun-Chi basin, that developed a general pattern of secondary burial sometime during the metal period continuing until the historical time.

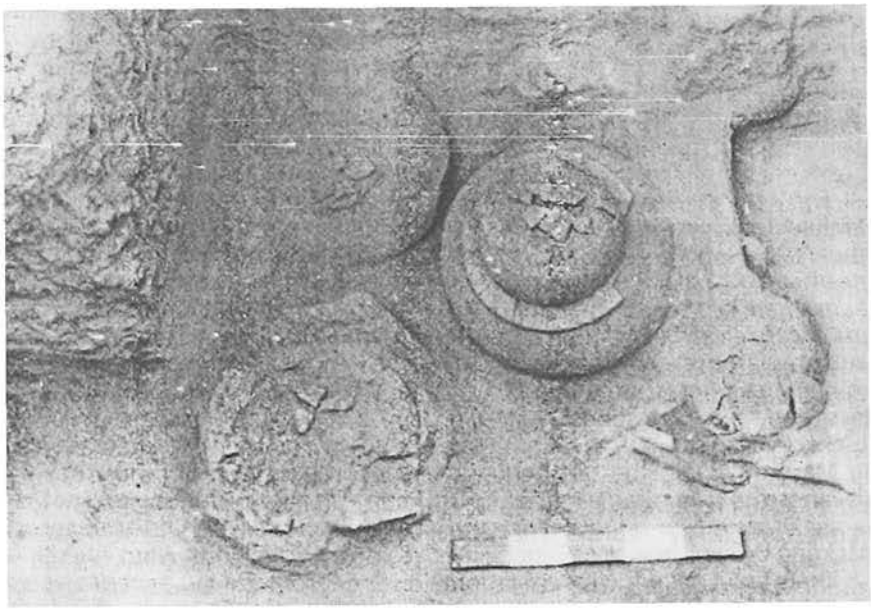
The survey team was able to identify and locate 172 archaeological sites (prehistoric and historic) in the surveyed area of the Nam Songkram. About 45% of the total sites identified have the Ban Chiang type of painted pottery. A dense concentration of the Ban Chiang culture is located in the flooded plain southwest of Hai Pla Hang and south of Huai Nam Yam. Despite the controversial proposed date of the early Ban Chiang culture, i.e., 3600 B.C. by Gorman and Charoenwongsa 1976, the survey team felt that more excavations should be carried out at another major sites for comparative dating such as at Ban Phon Sung, Sawangdangdin district, Udon Thani; at Ban Tung Chuak, Waritchaphum district, Sakon Nakon province; and at Ban Phanna, Swangdangdin district, Udon Thani province. It appears from the ground surface survey from the latter site that this ancient site had a continuous occupation from the prehistoric time up to the recent historic period as evidenced from the presence of ancient sema stone (ca. 10th century A.D.), Khmer-like potsherds (ca. 11th-12th century A.D.), and Laotian temple (ca. 18th century A.D.).

It is hoped that future systematic excavations in this area would shed more light concerning the development of prehistoric culture or cultures in northeast Thailand.

Project IV

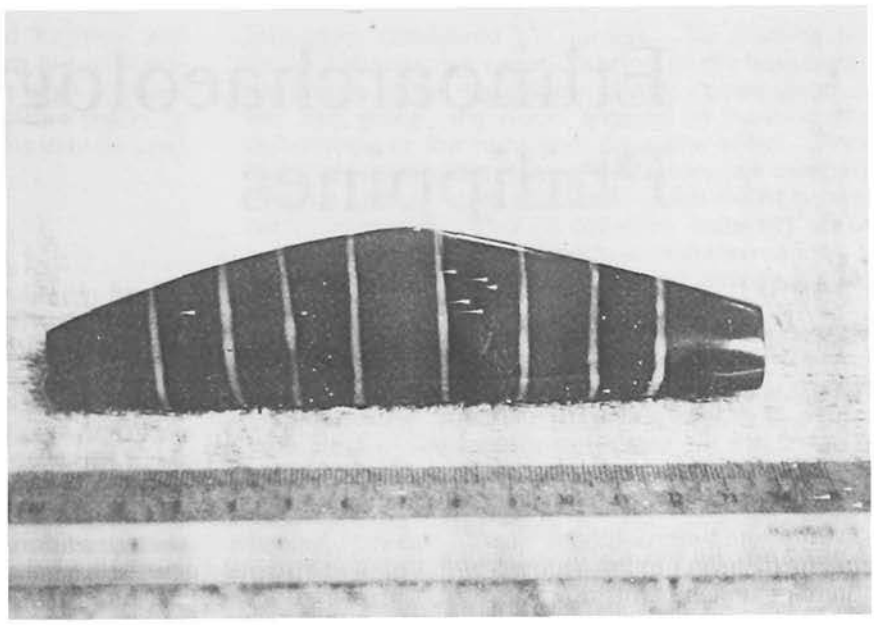
The fourth project which is in progress deals with an archaeological and historical study and survey of riverine adaptation along the Jorakee Samphan River and its tributaries, Suphanburi province. The archaeological survey and excavations are directed by Pornchai Suchitta and the historical survey part of this project, by Suebsang Phrombun from the History Department, Thammasart University, Bangkok. This project is funded by the Thai Kadi Institute.



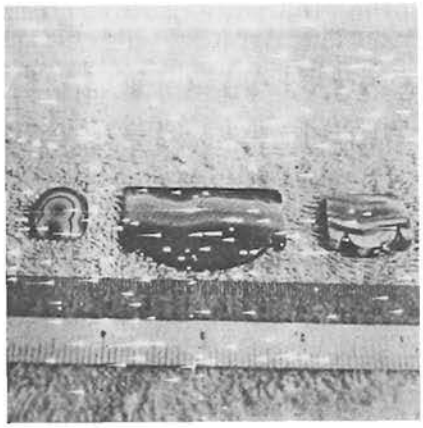


Excavation at Ban Yu Wuk, Surin province, showing a group of burial pots with human skeletal remains inside and outside the pots (scale = 50 cm.)

NL-1'82 : showing the exposed stratigraphy with shell remains at Ban Na Lao, Uthong district, Suphanburi province



Etched carnelian bead found by a villager in a burial near U-thong district, Suphanburi province



Left: NL-II'82 : a polished stone adze was found in situ at 90 - 100 cm. depth at Ban Na Lao, U-thong district, Suphanburi province. Right : Agate beads in various forms and colours found by a villager near U-Thong district, Suphanburi province

Archaeological test excavations were conducted last October 1982 in the area of Ban na Lao and Ban Jorakee Samphan, U-thong district, Suphanburi province. The aims are to discern the stratigraphy and its associated artifacts, to trace the cultural development of this area and its chronology from the prehistoric era up to the present, and to compare the data from these excavated sites to other known archaeological sites in the nearby areas and abroad such as India. The villagers reported that etched agate and carnelian beads which appear to have been imported from India around the early centuries A.D. had been found in ancient burials at various places especially in U-thong and nearby districts.

Our test excavations reveal artifacts such as polished stone axes, various types of earthenware potsherds, a few glass beads, and fragment of stone ornaments. At about 75 cm depth animal bones were found in association with a burnt area with pieces of charcoal around. Charcoal samples from this layer were sent for C-14 analysis. Other major faunal remains include a great quantity of fresh water shellfish which is usually found below one meter depth. At present the excavated data are still being analyzed. It is hoped that a preliminary report will be out by the middle of 1983.

Final Remarks

Further work is being carried out on these four archaeological projects described here. These include metallurgical study and pottery analyses on samples from various archaeological sites. The Department of Anthropology hopes to publish the final reports from these studies and surveys in the very near future. In addition, further excavations are planned around the middle of this year; a return to the ancient site at Ban Ya Wuk, Surin province is expected. It is hoped that the data from these general surveys would shed some light on future excavations in discerning the obscure cultural development in the northeast and central regions of Thailand through time.